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METHOD FOR PACKING POWDERY OR GRANULAR ARTICLE

[BUNRYUJO BUPPIN NO JUTEN HOHO]

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## SPECIFICATION

### I. Title of the Invention

Method for Packing Powdery or Granular Article

### II. Scope of Patent Claims

(1) A method for packing a powdery or granular article, characterized in that a suction force is acted from an opening of a vessel, and the powdery or granular article is sucked into the vessel from a supply hole at the bottom of the vessel to pack it while the opening is closed by a porous plate.

### III. Detailed Description of the Invention

(Field of Industrial Application)

This invention relates to a method for packing a powdery or granular article, such as a powdery or granular cosmetic, medicine, food, or the like, into a vessel.

[Prior Art]

When a powdery or granular article such as a powdery or granular cosmetic, medicine, food, or the like is packed into a

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<sup>1</sup>Numbers in the margin indicate pagination in the foreign text.

vessel, a method for weighing or quantitatively supplying it from an opening above the vessel has been generally used.

In the case based on such a packing method, a powdery or granular article had to be weighed or quantified during the packing, and the method had disadvantages in that it was troublesome, a mechanism for such weighing and quantification was expensive, and the cost became high in automatic packing. When a powdery or granular article was packed until it filled up the volume of the vessel, after a little excess was packed, a method wherein a spatula or a shutter was shifted in parallel to the opening surface of the vessel to remove the excess had been generally carried out. However, such a packing operation had disadvantages in that the workability was bad and the powdery or granular article became wasteful. Moreover, it was concerning that dust was generated and the operational environment deteriorated when the excess was removed from the opening surface.

(Problem to Be Solved by the Invention)

This invention is to solve the above mentioned disadvantages observed in the conventional method for packing a powdery or granular article, and to provide a packing method that can pack a predetermined amount of powdery or granular

article with no need to weigh or quantify it during the packing and that does not cause the generation of dust.

(Means for Solving the Problem)

To solve the above problem, a means adopted by the present

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invention is characterized in that a suction force is acted from an opening of a vessel, and the powdery or granular article is sucked into the vessel from a supply hole at the bottom of the vessel to pack it while the opening is closed by a porous plate.

(Operation)

A powdery or granular article is sucked and packed from a supply hole at the bottom of the vessel by suction from a suction head.

(Embodiment)

A preferable embodiment relating to this invented method is described with reference to a drawing below. In the drawing, 1 is a vessel, and a supply hole 2 is opened at the bottom. About 1 ~ 10 apertures of about 1 ~ 10 mm in diameter are formed as the supply hole 2 according to the particle size of the powdery or granular material. The numeral 3 is a suction head connected to the opening surface 4 of vessel 1, and the suction port of the head 3 has an area the same as or wider than the opening surface of vessel 1. A release paper 5 and a porous plate 6 are

arranged between suction head 3 and opening surface 4 of vessel 1. Release paper 5 is used to improve the peeling of the powdery or granular material after the suction, and a paper as thin as possible is preferable to prevent reduction of the suction force.

Porous plate 6 is made of a net-like or porous material, and a porous plate with a coarse mesh is preferable because the suction ability reduces if the mesh is too fine. The suction is easy at a wind velocity of 40 m/s or above, but about 30 m/s is also possible in the case of granules.

A suction opening-closing plate 7 is provided in suction head 3 and is opened simultaneously with the suction. If the flow of the powdery or granular article is stopped, it is closed by sensation with a sensor.

The numeral 8 is a hopper storing the powdery or granular article, and supply hole 2 of vessel 1 is connected to its bottom by hose 9. Air blowing device 10 is arranged at the bottom of hopper 8, air is supplied into the bottom of hopper 8 to agitate the internal powdery or granular article and to prevent the generation of cavities due to the suction, and aeration is generated to improve the flow of the powdery or granular article. Of course, agitation or vibration may also be

given in place of blowing air. The numeral 11 is an air draft pipe.

The packing is carried out as below. Namely, hopper 8 and supply hole 2 of vessel 1 are connected with hose 9, suction head 3 is set up at opening surface 4 of vessel 1 via release paper 5 and porous plate 6, and then suction opening-closing plate 7 is opened to start the suction. A powdery or granular article in hopper 8 is sucked from supply hole 2 into vessel 1 through hose 9. If the inside of vessel 1 is filled up, the flow of the powdery or granular article is stopped, and therefore, suction opening-closing plate 7 is closed, and the suction is stopped by sensing it with a packing sensing sensor 12. After the packing, porous plate 6 and release paper 5 are removed. The amount of packing into vessel 1 can be regulated to any amount by setting up the positions of release paper 5 and porous plate 6 set in vessel 1. When packing with a little excess is necessary to press and mold after the packing, like for a solid powdery cosmetic, it can be simply achieved by connecting the rising peripheral wall to the opening of vessel 1 surrounding the opening.

In the above packing, the generation of dust is not a concern, because the powdery or granular article closed in a circuit is not released to flowing air.

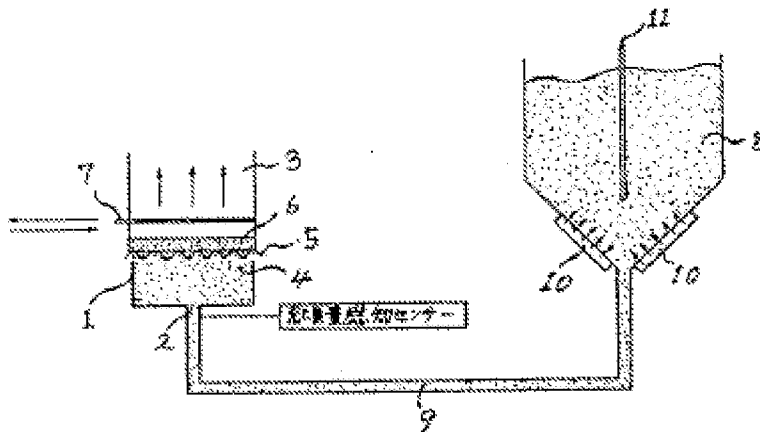
(Effects of the Invention)

According to this invented packing method for a powdery or granular article, the powdery or granular article is sucked and packed into the vessel, and therefore, the powdery or granular article is not scattered into the air, the generation of dust is not a concern, and the packing amount can be arbitrarily set up according to the set position of a porous plate retaining the sucked powdery or granular article in the vessel. Thus, a special weighing or quantifying means is completely unnecessary. Packing until the volume of the vessel is filled can also be carried out very simply.

IV. Brief Description of the Drawings

The drawing is a layout drawing for schematically showing the invented method.

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[Packing amount sensing sensor]